NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

# LICENSEE EVENT REPORT (LER)

| FACILITY NAME (1) | DOCKET NUMBER (2) | PAGE (3) |
|---|---|---|
| Limerick Generating Station Unit 1 | 0 5 0 0 0 3 5 2 | 1 OF 0 4 |

TITLE (4) Reactor Enclosure Isolation and Engineered Safety Feature Actuations Caused by Component Failure

| EVENT DATE (5) | | | LER NUMBER (6) | | | REPORT DATE (7) | | | OTHER FACILITIES INVOLVED (8) | |
|---|---|---|---|---|---|---|---|---|---|---|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH | DAY | YEAR | FACILITY NAMES | DOCKET NUMBER(S) |
| | | | | | | | | | | 0 5 0 0 0 |
| 0 5 | 0 9 | 8 8 | 8 8 | 0 1 7 | 0 0 | 0 6 | 0 8 | 8 8 | | 0 5 0 0 0 |

| OPERATING MODE (9) | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11) | | | |
|---|---|---|---|---|
| 1 | 20.402(b) | 20.405(c) | X 50.73(a)(2)(iv) | 73.71(b) |
| POWER LEVEL (10) 0 9 0 | 20.405(a)(1)(i) | 50.36(c)(1) | 50.73(a)(2)(v) | 73.71(c) |
| | 20.405(a)(1)(ii) | 50.36(c)(2) | 50.73(a)(2)(vii) | OTHER (Specify in Abstract below and in Text, NRC Form 366A) |
| | 20.405(a)(1)(iii) | 50.73(a)(2)(i) | 50.73(a)(2)(viii)(A) | |
| | 20.405(a)(1)(iv) | 50.73(a)(2)(ii) | 50.73(a)(2)(viii)(B) | |
| | 20.405(a)(1)(v) | 50.73(a)(2)(iii) | 50.73(a)(2)(x) | |

LICENSEE CONTACT FOR THIS LER (12)

| NAME | TELEPHONE NUMBER |
|---|---|
| Charles A. Mengers, Senior Engineer, Licensing Section | AREA CODE 2 1 5 8 4 1 - 5 1 8 4 |

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS |
|---|---|---|---|---|---|---|---|---|---|
| X | V A | P S V | A 4 9 9 | Y | | | | | |
| | | | | | | | | | |

| SUPPLEMENTAL REPORT EXPECTED (14) | | EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
|---|---|---|---|---|---|
| YES (If yes, complete EXPECTED SUBMISSION DATE) | X NO | | | | |

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)


Abstract: 88-017

On May 9, 1988 at 2155 hours, a Reactor Enclosure isolation and Nuclear Steam Supply Shutoff System (NSSSS) Group VI A and VI B isolations occurred on low differential pressure between the Reactor Enclosure and outside air. The Reactor Enclosure Recirculation System (RERS) and Standby Gas Treatment System (SGTS), Engineered Safety Features, initiated as designed. Prior to the event, with the 'A' and 'C' trains of the Reactor Enclosure Ventilation system in operation, the 'A' Reactor Enclosure Equipment Compartment Exhaust (REECE) Filter was blocked out of service to change its prefilters. The 'B' Reactor Enclosure Air (ventilation) Exhaust Fan was started in preparation for removal of the 'A' fan from service and the 'A', 'B' and 'C' exhaust fans tripped after a 6 second time delay. The Reactor Enclosure isolated on low differential pressure. The cause of the event was a component failure of unknown cause. When the 'A' REECE filter was blocked from service, the solenoid valve, which provides the pneumatic actuation of the filter train's discharge damper, failed to fully close and instrument air leaked from the solenoid's vent port. The decrease in instrument air pressure caused the ventilation exhaust fan's discharge dampers to close, resulting in the fan trips. The solenoid has been replaced. The consequences of this event were minimal; the SGTS and RERS functioned as designed.

| FACILITY NAME (1) | DOCKET NUMBER (2) | LER NUMBER (6) | | | PAGE (3) |
|---|---|---|---|---|---|
| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | |
| Limerick Generating Station Unit 1 | 0 5 0 0 0 3 5 2 | 8 8 | — 0 1 7 | — 0 0 | 0 2 OF 0 4 |

TEXT (If more space is required, use additional NRC Form 366A's) (17)

Unit Conditions Prior to the Event:

Operating Mode 1 (Power Operation)
Reactor Power 90%

Description of the Event:

On May 9, 1988 at 2155 hours, a Reactor Enclosure isolation and Nuclear Steam Supply Shutoff System (NSSSS) Group VI A and VI B isolations occurred on low differential pressure between the Reactor Enclosure and outside air. The Reactor Enclosure Recirculation System (RERS) and Standby Gas Treatment System (SGTS), Engineered Safety Features, initiated as designed.

On May 9 prior to the event, with the 'A' and 'C' trains of the Reactor Enclosure Ventilation system in operation, the 'A' Reactor Enclosure Equipment Compartment Exhaust (REECE) Filter was blocked out of service to change its prefilters. Independent from blocking the REECE filter, the 'B' Reactor Enclosure Air (ventilation) Exhaust Fan was started in preparation for removal of the 'A' fan from service and the 'A', 'B', and 'C' exhaust fans tripped after a 6-second time delay. The Reactor Enclosure isolated on low differential pressure after a 100 second time delay and the RERS and SGTS initiated as designed. NSSSS Group VI A and VI B isolations of the Primary Containment Purge Supply/Exhaust and the Primary Containment Exhaust to REECE also occurred.

The isolations were reset and a restart of the 'B' and 'C' fans was unsuccessful and a second low differential pressure isolation occurred, initiating SGTS and RERS.

Following the event, the utility employed plant operators performing this activity heard air blowing from solenoid valve SV-76-144A which provides the pneumatic actuation of the 'A' REECE filter train discharge damper. The instrument air supply to SV-76-144A was blocked closed and the air flow ceased.

Reactor Enclosure Ventilation was restored at 2300 hours on May 9, 1988, with the 'A' and 'C' trains in operation with the 'A' REECE filter blocked out of service. The Reactor Enclosure Ventilation System was out of service for 65 minutes.

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|---|---|---|---|---|---|
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Consequences of the Event:

Normal Reactor Enclosure Ventilation tripped and the Reactor Enclosure isolation valves closed as a result of the event. Standby Gas Treatment System (SGTS) and Reactor Enclosure Recirculation System (RERS) operated as designed. There was no release of radioactive material as a result of this event. If the primary RERS or SGTS train had failed to initiate, the redundant loops of both systems are designed to automatically initiate after a time delay.

Cause of the Event:

This event was caused by a component failure. When the 'A' REECE Filter was blocked from service, solenoid valve SV-76-144A, which provides pneumatic actuation of the filter train's discharge damper, failed to fully close and allowed instrument air to leak out the vent port of the solenoid. The solenoid valve was stuck in mid-position. SV-76-144A is supplied by a 100 psi instrument air supply header which also supplies the instruments which control the 'A', 'B', 'C' Reactor Enclosure exhaust fan's discharge dampers. With SV-76-144A allowing the instrument air to leak, enough air pressure existed at that time to maintain the 'A' and 'C' discharge dampers open. However, when the 'B' exhaust fan was started, the instrument air header pressure was sufficiently depleted to cause all three discharge dampers to close and subsequently resulted in the three exhaust fan trips.

Corrective Actions:

The instrument air supply to SV-76-144A was closed following the second Reactor Enclosure isolation. The solenoid valve was examined and stroke tested on May 10, 1988. The valve was found to be stuck in mid-position. On May 11 the solenoid of SV-76-144A was replaced and the ventilation and REECE trains were tested and found to operate with no further problems. Solenoid valve SV-76-144A is a model 831654 manufactured by ASCO. The cause for the solenoid failure could not be determined.

Actions Taken to Prevent Recurrence:

The investigation into the cause for the solenoid failure is continuing. ASCO will be contacted regarding this event. Any additional significant information concerning the cause of this event will be provided in a supplement to this report.

EIIS Codes:

Reactor Enclosure Ventilation, VA
SGTS, BH
RERS, BH
Instrument Air Supply, LD
NSSSS, JC
Reactor Enclosure Equipment Compartment Exhaust, XX

Fan, FAN
Damper, CDMP
Solenoid Valve, PSV
Filter, FLT

Previous Similar Occurrences:

A number of LERs involve isolations of the Reactor Enclosure Ventilation, however, none have a similar cause.

Tracking Code: B99, Component Failure of Unknown Cause

PHILADELPHIA ELECTRIC COMPANY

2301 MARKET STREET

P.O. BOX 8699

PHILADELPHIA, PA. 19101

(215) 841-4000

June 8, 1988

Docket No. 50-352

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: Licensee Event Report
Limerick Generating Station - Unit 1

This LER reports an unplanned isolation of the Reactor Enclosure along with the actuation of the Standby Gas Treatment System, Reactor Enclosure Recirculation System, and Nuclear Steam Supply Shutoff System (Engineered Safety Features) due to a component failure.

| | |
|---|---|
| Reference: | Docket No. 50-352 |
| Report Number: | 88-017 |
| Revision Number: | 00 |
| Event Date: | May 9, 1988 |
| Report Date: | June 8, 1988 |
| Facility: | Limerick Generating Station<br>P.O. Box A, Sanatoga, PA 19464 |

This LER is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(iv).

Very truly yours,

R. H. Logue
Assistant to the Manager
Nuclear Support Division

cc: W. T. Russell, Administrator, Region I, USNRC
T. J. Kenny, USNRC Senior Resident Inspector
INPO Records Center

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